REMARKS

Claims 1-5, 7-18 and 20-25 are pending. By the Office Action, 1-5, 7-18 and 20 are rejected under 35 U.S.C. §103. By this Amendment, claims 1, 7, 13, 14 and 20 are amended and claims 21-25 are added.

Claims 7 and 20 are amended to clarify antecedent basis issue. Support for new claims 21 and 22 can be found in the specification as filed, such as in original claim 13. Support for new claim 23 can be found in the specification as filed, such as in original claim 1. Support for new claim 24 can be found in the specification as filed, such as at page 5, lines 15-33. Support for new claim 25 can be found in the specification at, for example, page 13, lines 1-6. Claims 1, 13 and 14 are amended for clarity only and are supported by the claims as filed. No new matter is added.

I. Rejection/Objection Under §112

In the previous Office Action, claims 6-7 and 19-20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The present Office Action does not carry forward the rejection, but makes comments that appear to question Applicants' previous response. Applicants respectfully traverse this rejection.

As presented, claims 1, 7, 14 and 20 specify that "the amount of polymer particles enclosed in the bag is in excess compared to the theoretical amount that would be just required to fill up the bag when they are in the full swollen state." These limitations indicate that the bag contains an amount of polymer particles, which is higher than the amount that would be required to completely fill the bag when the polymer particles are in the full swollen state. Applicants submit that this means of claiming the invention is proper, as it relates the amount of polymer particles to the amount that would be required, when fully swollen, to fill the bag. This is not indefinite, and would be clear to one of ordinary skill in the art. Thus, in the claimed invention, the bag contains a sufficient amount of particles such that the volume

limitation of the bag will constrain all of the particles from achieving the full swollen state, because there is insufficient room in the bag to allow all of the particles to achieve the full swollen state.

Again, by way of example only, and without limitation on the claimed invention, it may help to assume the following: If the bag could hold 100 polymer particles in their fully swollen state, then claims 1 and 14 would require that the bag contain in excess of (i.e., more than) 100 polymer particles. Claims 7 and 20 would require that the bag contain from 105 to 110 polymer particles.

Accordingly, Applicants respectfully submit that the claims clearly define the claimed invention, and would not be considered indefinite to one of ordinary skill in the art. Reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejection Under §103

A. Goldman and Bahia

Claims 1-5, 7-18 and 20 are rejected under 35 U.S.C. §103(a) over Goldman in view of Bahia. Applicants respectfully traverse this rejection.

Independent claim 1 is directed to an article with cooling capability by water desorption from a water-swollen gel, comprising: a polymer absorbent enclosed within a bag delimited by a collapsible envelope having non-watertight walls, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences for retaining absorbed water and a shell of more cross-linked polymer sequences for retarding diffusion of water from a particle to another during desorption of absorbed water, and wherein the amount of polymer particles enclosed in the bag is in excess compared to the theoretical amount that would be just required to fill up the bag when they are in the full swollen state. Independent claim 14 is directed to an article with cooling capability by water desorption from a water-swollen gel, comprising: a polymer absorbent

enclosed within a bag delimited by a collapsible envelope having non-watertight walls and made of a non-woven fabric comprising longer threads or fibers of natural or semi-synthetic nature and shorter polyester fibers, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences for retaining absorbed water and a shell of more cross-linked polymer sequences for retarding diffusion of water from a particle to another during desorption of absorbed water, and wherein said polymer absorbent has a sodium polyacrylate base, and wherein the amount of polymer particles enclosed in the bag is in excess compared to the theoretical amount that would be just required to fill up the bag when they are in the full swollen state. Independent claim 13 is directed to a method for relieving pain from a sore part of an individual's body with a cooling article comprising a polymer absorbent enclosed within a bag delimited by a collapsible envelope having non-watertight walls, wherein said polymer absorbent is in particulate form wherein each particle comprises a core of less cross-linked polymer sequences for retaining absorbed water and a shell of more cross-linked polymer sequences for retarding diffusion of water from a particle to another during desorption of absorbed water, said method comprising: wetting said polymer particles with water through said envelope during a sufficient time to swell them into a gel mass filling up said bag, and applying said article on said sore part of the individual's body maintaining an inner wall in close contact thereon while allowing water vapor desorbed from said particles to escape through an opposed outer wall of said envelope.

Such articles and methods are not taught or suggested by the cited references.

In contrast to the claimed invention, Goldman is directed to an absorbent member useful in the containment of body fluids such as urine. Goldman discloses that such absorbent members are, for example, disposable diapers, adult incontinence pads and briefs, and catamenial products such as sanitary napkins. See col. 1, lines 19-21 and claims 33-35.

The absorbent member has at least one region containing hydrogel-forming absorbent polymer in a concentration of from about 60 to 100% by weight and providing a gel-continuous fluid transportation zone when in a swollen state. This hydrogel-forming absorbent polymer has: (a) a Saline Flow Conductivity (SFC) value of at least about 30 x 10^{-7} cm^3 sec/g; (b) a Performance under Pressure (PUP) capacity value of at least about 23 g/g under a confining pressure of 0.7 psi (5 kPa); and (c) a basis weight of at least about 10 gsm. The region where this hydrogel-forming absorbent polymer is present has, even when subjected to normal use conditions, sufficient wet integrity such that the gel-continuous zone substantially maintains its ability to acquire and transport body fluids through the gel-continuous zone. See Goldman at Abstract. Bahia is cited for its disclosure of the use of a viscose fiber in a wound dressing. See Bahia at col. 3, lines 40-43.

The Office Action has not established a prima facie case of obviousness. The requirements for a prima facie case of obviousness are specified and described in MPEP §2143. According to MPEP §2143, to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference. Second, there must be a reasonable expectation of success. Third, the prior art reference must teach or suggest all the claim limitations. The references applied in the Office Action fail to teach or suggest all the claim limitations, or to provide any reasonable expectation of success.

1. The Claimed Invention and Goldman are Different Products

First, Applicants submit that the claimed invention and Goldman are directed to entirely different products. Goldman is directed to a product for absorbing bodily fluids such as urine and menses, and which is disposed of when swollen. The claimed invention is directed to an article with cooling capability by water desorption, which can be used to relive pain from a sore part of a body. See claims 1, 13 and 14. In use, the article of the claimed invention is first exposed to water to swell the polymer particles, and the particles slowly

desorb water over time during use. Thus, the article of Goldman is applied in a dry state and thrown away when swollen, whereas the article of the claimed invention is applied in the wet or swollen state, and re-used or discarded when desorbed.

Based on these difference, one of ordinary skill in the art would not have been motivated to modify the absorbent article of Goldman to provide a cooling article of the claimed invention.

2. The References Do Not Teach or Suggest the Amount of Polymer

Furthermore, neither Goldman nor Bahia teach or suggest the limitation in claims 1 and 14 that the amount of polymer particles enclosed in the bag is in excess compared to that which would be just required to fill up the bag when they are in the full swollen state. As described above, this limitation indicates that the bag contains a sufficient amount of particles such that the volume limitation of the bag will constrain all of the particles from achieving the full swollen state, because there is insufficient room in the bag to allow all of the particles to achieve the full swollen state. As a result, when the article is wetted with water, the particles absorb water and swell. However, because of the excess amount of polymer particles, and of the restricted internal volume of the envelope (or bag), some of the polymer particles cannot swell completely. When the internal volume of the envelope is completely occupied by swelled particles, there remains some particles that are not fully swollen. These non-fully-swollen particles are generally located next to the envelope walls, and are capable of absorbing trace amounts of liquid, such as water, moisture or sweat, penetrating into the bag through the envelope. The results is an improved article for keeping the envelope dry.

Goldman and Bahia fail to teach or suggest at least the limitation regarding the excess amount of polymer particles. Nor do the references teach or suggest any reason to modify the disclosed articles to provide such an excess of polymer particles. For these reasons alone, the claimed invention would not have been obvious over the cited references.

3. There Was No Motivation to Modify the Cited References

Furthermore, Applicants submit that one of ordinary skill in the art would not have been motivated to provide the claimed invention based on the cited references. In Goldman and Bahia, the purpose of the contained particles is to swell and retain liquid. However, providing an excess of polymer particles would be contrary to the objectives of the references, since the excess of particles would be expected to retain less liquid, or at least to retain the liquid less efficiently.

Still further, the different objectives of the claimed invention and Goldman would lead to different motivations for the article structures. The claimed invention requires specific limitations with respect to the polymer particles and the envelope (bag). These limitations affect the ability of the article to maintain a cooling effect over an extended period for the relief of pain by slowly desorbing the contained moisture, while maintaining a dry feeling to the individual. Goldman, however, provides an article that must quickly absorb fluids that contact the article, and not allow those fluids to escape. The Goldman structure must thus quickly absorb fluid while not allowing desorption, and while not providing a cooling effect to the individual.

Accordingly, one of ordinary skill in the art based on the cited references would not have been motivated to combine the cited references, and modify the resultant combination to practice the claimed invention.

4. Conclusion

Accordingly, the claimed invention of claims 1, 13 and 14 would not have been obvious over Goldman in view of Bahia. The remaining claims depend from claims 1 or 14, and are patentable for at least the same reasons as claims 1 and 14. Reconsideration and withdrawal of the rejection are respectfully requested.

B. Goldman, Bahia and Graham

Claim 13 is rejected under 35 U.S.C. §103(a) over Goldman in view of Bahia or Graham. Applicants respectfully traverse this rejection.

Independent claim 13 is discussed above. Such a method is also not taught or suggested by the cited references.

Goldman and Bahia are discussed above. Graham is cited for its disclosure of a method for treating a patient involving applying an article to a patient's body. See Graham at claim 2. However, any combination of Goldman, Bahia and Graham would not have provided the invention of independent claim 13.

The present invention is based in part on the discovery that the specific core-shell structure of the polymer particles confer unexpectedly improved properties to the article. In particular, the polymer particles confer to the article in which they are contained, after it is wetted with water, a high and long-lasting cooling capability when it is applied to the skin. The claimed invention provides a high thermal inertia and low heat losses, presumably because the highly cross-linked outer layer of the particles only allow water in the form of vapor to escape from the particle cores, and by slowing water circulation from one particle to another.

None of the cited references teach or suggest the claimed particle structure, or the benefits provided thereby. Goldman discloses an absorbent member having at least one region containing hydrogel-forming absorbent polymer. See Goldman at Abstract. Bahia discloses a wound dressing made of absorbent fibers, which is intended to be applied on a wound to absorb fluids. Graham discloses an envelope containing a particulate water insoluble hydrogel, which can be used to absorb water present in the atmosphere, or to administer sustained release compositions to an animal or human. The polymer particles of Graham do not have a core-shell structure.

The wound dressing of Bahia and the article of Graham are thus not intended to be first wetted with water. Wetting the articles with water would appear to be contrary to the objectives of absorbing water (in Bahia or Graham). One of ordinary skill in the art would have understood that first wetting the article prior to application to the patient, would result in decreased future absorption by the article without providing any initial benefits.

Likewise, one of ordinary skill in the art would not have been motivated to use the claimed core-shell polymer particles in the article of Graham, where the article is intended to provide sustained release of the contained compositions to an animal or human. Use of such particles, which would provide a barrier to liquid transport, would destroy the very purpose of the article of Goldman.

Accordingly, Applicants submit that the cited references do not teach or suggest the claimed invention, either alone or in combination. The references do not teach or suggest all of the claim limitations, and do not provide any motivation for one of ordinary skill in the art to have combined the references in the manner asserted in the Office Action.

Accordingly, the claimed invention of claim 13 would not have been obvious over Goldman in view of Bahia or Graham. Reconsideration and withdrawal of the rejection are respectfully requested.

III. New Claims

New claims 21 and 22 are added. New claims 21 and 22 depend from claims 1 and 14, respectively, and specify that the article relieves pain from a sore part of an individual's body by a cooling effect. As described above, the article of Goldman is directed to an absorbent member useful in the containment of body fluids such as urine. Goldman and Bahia do not teach or suggest that the absorbent member of Goldman could or should be used to relieve pain from a sore part of an individual's body by a cooling effect. Accordingly, claims 21 and 22 are further patentable over the cited references.

Claim 23 is added, which depends from claim 13 and specifies that the amount of polymer particles enclosed in the bag is in excess compared to the theoretical amount that would be just required to fill up the bag when they are in the full swollen state. As described above, neither Goldman nor Bahia teach or suggest that the amount of polymer in the bag should specifically be selected as an amount that is in excess compared to the theoretical amount that would be just required to fill up the bag when they are in the full swollen state. Accordingly, claim 23 is further patentable over the cited references.

Claim 24 is added, which depends from claim 23 and specifies that during said applying, non-fully swollen particles of said polymer absorbent are disposed close to the walls of the bag to absorb traces of moisture penetrating into the bag through the envelope. As described above, the method of claim 24 utilizes a bag that contains an excess amount of polymer particles compared to the theoretical amount that would be just required to fill up the bag when they are in the full swollen state. Accordingly, when the bag is fully swollen, at least some of the polymer particles will remain in a non-fully swollen state, since the bag is not big enough to allow all of the particles to become fully swollen. In this state, the fully swollen particles will tend to move toward the center of the bag to form a gel, while the non-fully swollen particles are pushed to the walls of the bag. As water is desorbed through the envelope during use, the non-fully swollen particles at the bag wall absorb trace amounts of moisture that may be present, which ensures a dry feeling to the user. See page 5, lines 15-33. These features are also not taught or suggested by Goldman or Bahia. Accordingly, claim 24 is further patentable over the cited references.

Claim 25 is added, which specifies that the sore part of the individual's body is normally dry. Because the cooling article is applied to the sore part of the body after the particles in the cooling article are wetted and swelled, the cooling article does not absorb water as in the conventional absorbent articles of the prior art. Neither Goldman nor Bahia

teach or suggest that the article is a cooling article, or that it is applied to an area of the body that is normally dry. Instead, the references teach articles that are used to absorb liquids such as urine. Accordingly, claim 25 is further patentable over the cited references.

IV. Conclusion

In view of the above amendments and remarks, it is respectfully submitted that the above-identified patent application is in condition for allowance. Favorable consideration and prompt allowance are therefore respectfully requested.

Should the Examiner believe anything further would be necessary in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

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Date: December 4, 2003

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